

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Claim 1 (Previously Presented): A MIM capacitor comprising:

first and second electrodes formed from a metal material;

a capacitor insulating film;

a first diffusion film interposed between said capacitor insulating film and said first electrode to prevent diffusion of atoms constituting the metal material; and

a second diffusion prevention film interposed between said capacitor insulating film and said second electrode to prevent diffusion of atoms constituting the metal material;

wherein entire interface surfaces between the first diffusion prevention film and the capacitor insulating film and entire interface surfaces between the second diffusion prevention film and the capacitor insulating film are flat, and

wherein the first electrode is filled in a first trench and has a flat surface, and the second electrode is filled in a second trench and has a flat surface.

Claim 2 (Original): The MIM capacitor according to claim 1,

wherein a shape of said first and second electrodes is one of shapes including matrix, drainboard, and comb shapes other than a rectangular shape.

Claim 3 (Currently Amended): The MIM capacitor according to claim 1,

wherein said first trench is formed in a semiconductor substrate, and said second trench is formed in an insulating film on the semiconductor substrate.

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Application No.09/734,658
Amendment Under 37 CFR §1.312 filed:
Allowed: May 5, 2004

Claim 4 (Original): The MIM capacitor according to claim 1, wherein said first and second diffusion prevention films include metal nitride films.

Claim 5 (Original): The MIM capacitor according to claim 1,
wherein said first and second diffusion prevention films consist of one member selected from the group consisting of Ti, TiN, TiSiN, Ta, TaN, TaC, TaSiN, TaCeO₂, Ir₄₆Ta₅₄, W, WN, W₂N, W₆₄B₂₀N₁₆, W₂₃B₄₉N₂₈, and W₄₇Si₉N₄₄.

Claim 6 (Original): The MIM capacitor according to claim 1,
wherein the metal material includes Cu.

Claim 7 (Original): The MIM capacitor according to claim 1,
further comprising an insulating layer having an opening on said first electrode;
wherein said first diffusion prevention film is filled in the opening of said insulating layer, and said capacitor insulating film and said second diffusion prevention film are formed on said first diffusion prevention film.

Claim 8 (Original): The MIM capacitor according to claim 7,
wherein ends of said capacitor insulating film and said second diffusion prevention film overlap said insulating layer.

Claim 9 (Original): The MIM capacitor according to claim 8,
further comprising a silicon nitride film formed on said second diffusion prevention film.

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Claim 10 (Withdrawn): The MIM capacitor according to claim 1,
wherein said first diffusion prevention film is formed on said first electrode, said
capacitor insulating film is formed on said first diffusion prevention film, said second
diffusion prevention film is formed on said capacitor insulating film, and said first and
second diffusion prevention films and said capacitor insulating film are covered by a silicon
nitride film.

Claim 11 (Withdrawn): The MIM capacitor according to claim 1,
further comprising an insulating layer having an opening on said first electrode;
wherein said first and second diffusion prevention films and said capacitor insulating
film are formed in the opening of said insulating layer.

Claim 12 (Withdrawn): The MIM capacitor according to claim 11,
wherein ends of said first and second diffusion prevention films and said capacitor
insulating film overlap said insulating layer.

Claim 13 (Withdrawn): The MIM capacitor according to claim 12,
further comprising a silicon nitride film formed on said second diffusion prevention
film.

Claim 14 (Withdrawn): The MIM capacitor according to claim 1,
further comprising an insulating layer having an opening on said first electrode;

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wherein said first and second diffusion prevention films and said capacitor insulating film are formed in the opening of said insulating layer, and are separated from said insulating layer.

Claim 15 (Withdrawn): The MIM capacitor according to claim 14,
further comprising a silicon nitride film formed on said second diffusion prevention film.

Claim 16 (Withdrawn): The MIM capacitor according to claim 1,
further comprising a resistance element formed from the same material as a material forming at least either one of said first and second diffusion prevention films.

Claim 17 (Withdrawn): The MIM capacitor according to claim 16,
wherein said resistance element is formed in a CMOS logic area.

Claim 18 (Previously Presented): The MIM capacitor according to claim 1,
wherein said first trench is formed in a first insulating layer above a semiconductor substrate, and said second trench is formed in a second insulating layer above the first insulating layer.

Claim 19 (Withdrawn): The MIM capacitor according to claim 18,
further comprising a MOS transistor formed immediately below said first electrode.

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Claim 20 (Withdrawn): The MIM capacitor according to claim 19,
wherein a frequency of a signal supplied to said first and second electrodes and a
frequency of a signal supplied to said MOS transistor are different less than 50 times.

Claim 21 (Withdrawn): The MIM capacitor according to claim 19,
further comprising a shield line which is formed between said first electrode and said
MOS transistor, and set to a predetermined potential.

Claim 22 (Withdrawn): The MIM capacitor according to claim 21,
wherein the predetermined potential includes a ground potential.

Claim 23 (Withdrawn): The MIM capacitor according to claim 21,
wherein a frequency of a signal supplied to said first and second electrodes and a
frequency of a signal supplied to said MOS transistor are different not less than 50 times.

Claims 24-32 (Canceled).

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